

Committee to Bridge the Gap Critique of the Work Plan for Retesting of Parcel G Hunters Point Naval Shipyard

15 August 2018

A Process Plagued with Scandal

The Navy's cleanup of the contaminated Hunters Point Naval Shipyard has been plagued with scandal. Its contractor for much of the radioactive work, Tetra Tech, has been found to have fabricated a huge portion of the radiation measurements. For Parcel G, the parcel at issue here, the Navy itself concedes that there is evidence of data manipulation or fabrication at nearly half (49%) of the Tetra Tech soil survey units [99 out of 202].¹ The US Environmental Protection Agency and the California Department of Toxic Substances Control (DTSC) and California Department of Public Health (CDPH) have concluded that the data falsification is even higher, an additional 49%—so that only 3% of survey units in Parcel D had no signs of falsification of data, and that a total of 97% should be resampled.²

Summary of EPA, DTSC, CDPH review of Parcel G Radiological Data Evaluation

	Trench	Fill	Building Sites	Total	% of total
Total Survey Units in Parcel G	63	107	32	202	100%
Navy recommended resampling	20	53	25	98	49%
EPA, CDPH, DTSC recommend resampling	39	54	5	98	49%
Total recommended resampling	59	107	30	196	97%
No signs of falsification found in data	4	0	2	6	3%
% of total recommended resampling	94%	100%	94%	97%	

¹ Navy Base Realignment and Closure Program Management Office West, *Draft Radiological Data Evaluation Findings Report for Parcels B and G Soil Former Hunters Point Naval Shipyard San Francisco, California*, September 2017 (hereafter Navy 2017), p. iv-v

² EPA Final Comments on Draft Navy Radiological Data Evaluation Parcels B & G Report, December, 2017 (hereafter EPA 2017), p. 20

Courageous whistleblowers came forward with information about widespread fabrication of measurements to make it appear that soil that was contaminated was in fact clean and didn't need to get cleaned up, which would save the Navy a great deal of money. As the Navy review of Parcel G measurements summarized the allegations of soil data manipulation and falsification³:

- When sufficiently low levels of contamination were not obtained, soil samples were collected from a different area known to have lower radioactivity, and reported as having come from the location being investigated.
- Samples and analytical results were discarded when the results were above the release criteria.
- Instead of collecting soil samples from locations predetermined to have higher gamma scan readings, samples would be collected from nearby soil and represented as having come from the original location.
- When sufficiently low levels of contamination were not obtained, soil sample collection sites were moved 5 to 10 feet in another direction and a new sample was obtained. The new sample was represented as having been obtained from the original location.
- Chain-of-custody forms were falsified to support the false sample collection information
- During the screening of overburden soil, actual towed array speeds were greater than allowed speeds, thereby reducing the probability of radiation detection.
- Handheld detectors were used improperly, which may have led to increasing the detection limit of the scanning devices.
- Onsite soil sample results were reviewed and shipment of samples to the offsite lab was blocked if there was a high chance that the release criteria would be exceeded.

The whistleblower complaints were confirmed, and many other problems identified that resulted in contaminated soil being falsely declared clean and thus not cleaned up. As the EPA concluded, there was a “widespread pattern of ... deliberate fabrication”:⁴

The data analyzed demonstrate a widespread pattern of practices that appeared to show potential deliberate falsification, potential failure to perform the work required to ensure ROD [Record of Decision] requirements were met, or both. The data revealed not only potential purposeful falsification and fraud in terms of sample and/or data manipulation, they also reveal the potential failure to conduct adequate scans, a lack of proper chain of custody for ensuring samples were not tampered with, extensive data quality issues (including off-site laboratory data) and general mis-management of the entire characterization and cleanup project.

³ Navy 2017, pp. i-ii

⁴ EPA 2017, pp. 10-11, emphasis added

These observations in the record call into question the performance of Tetra Tech EC, Inc., across all of Parcel G. Many of the same personnel in Tetra Tech EC, Inc., worked in a similar time period at nearby locations in Parcel G. The pervasiveness and magnitude of the documented wrongdoing makes it difficult to conclude that similar falsification did not also occur at the four out of 63 trench units where evidence of wrongdoing was not as apparent. Therefore, none of the data generated while Tetra Tech EC, Inc., was involved with the cleanup activities at Parcel G, can be deemed to be definitive or defensible to demonstrate in the record that ROD requirements have been met.

A separate review of Tetra Tech's radiation measurements in buildings found a similar pattern of widespread fabrication of data.⁵ It found, for example, duplicate data strings (i.e., measurements had been made in one part of a building and then merely pasted into reports for other parts of the building or other buildings, without actual measurements being made). The scans took only half the time they should have taken, indicating either that the scan speed was twice what it should be (and thus incapable of detecting contamination at the required levels) or half of the buildings were reported as scanned when they weren't at all.

A Crisis in Public Confidence—A Cloud Over The Credibility of the Navy Hunters Point Cleanup Operation: Did Tetra Tech Act on Its Own, Or Based on Signals from the Navy?

As the EPA concluded, above, this widespread data falsification resulted in “*general mis-management of the entire characterization and cleanup project.*” The fundamental question is whether this mis-management of the entire Hunters Point radioactive cleanup project was a result of just astonishingly poor oversight by the Navy of its contractor, allowing the latter to engage in falsification for years, or whether something even more grave is at work. **Is what caused the scandal not that Tetra Tech was engaged in some rogue activity but was actually following directives, implicit or otherwise, from the Navy to declare contaminated areas in fact clean so as to reduce the Navy's cleanup expenditures?**

Two Tetra Tech employees have pled guilty and were sentenced to prison.⁶ At least one indicated that his actions were due to pressure from supervisors and managers, to declare contaminated areas clean so they wouldn't have to be remediated.⁷ Whistleblowers have identified a widespread pattern of orders to fabricate sampling and measurements so as to declare contaminated areas were in fact clean.⁸ How high up did those orders go? Did they stop at Tetra Tech management, or was Tetra Tech responding to its understanding of what the Navy

⁵ Department of the Navy Naval Facilities Engineering Command Base Realignment and Closure Program Management Office West, *Building Radiation Survey Data Initial Evaluation Report, Former Hunters Point Naval Shipyard San Francisco, California*, March 2018

⁶ See plea agreements, USA v. Justin E. Hubbard and USA v. Stephen C. Rolfe, US District Court, Northern District of California, San Francisco Division, May 18, 2017.

⁷ Rolfe plea agreement, *supra*, p. 4

⁸ See, e.g., Declaration of Anthony Smith in Support of Petition to Revoke the License of Tetra Tech, Inc., Before the US Nuclear Regulatory Commission, June 3, 2017

wanted—to save money by reducing cleanup, in turn by declaring soil or buildings that should be cleaned up not to need such remediation and expense?

The simplest way to answer that question is by examining the quality of the Navy proposal to remedy the falsification. If the scandal were truly limited to Tetra Tech and they had acted contrary to the Navy's wishes, explicit and implicit, then the retesting plan would be of high integrity, aimed at assuring that nothing that was contaminated went undetected and undeclared. If, on the other hand, Tetra Tech's actions were not an anomaly but a response to what it understand, at high levels, to be the Navy's wishes, whether communicated directly or by a wink and a nod, to reduce its cleanup expenses, then the retesting plan would have similar biases and deficiencies. Alas, the latter appears clearly the case.

The Work Plan Ignores the EPA Findings and Recommendations

As indicated earlier, the Navy found only 49% of the Parcel G survey units to be subject to data falsification and in need of retesting. EPA found twice that amount. And it had numerous criticisms of the Navy review.

However, the Navy has all but ignored the EPA findings in the retesting plan. The basic retesting will be limited to the survey units the Navy had initially found questionable. A second phase of far more cursory and limited surveying will occur for the additional survey units EPA (and DTSC and CDPH) found to have evidence of data fabrication and needing thorough retesting.

Furthermore, the detailed criticisms by EPA of the Navy's 2017 review of Tetra Tech's work on Parcel G have not even been acknowledged, let alone the problems fixed. One would think that given the fiasco of the years of Tetra Tech bogus work, and the failure of Navy oversight that allowed it to go on for so long—followed by the embarrassment that the Navy's review caught only half of the problems that EPA subsequently found—the Navy would acknowledge in detail the EPA review and follow EPA's recommendations to the letter. The refusal to even acknowledge the EPA review and criticisms in any real fashion suggests that the Navy's attitude remains, "full steam ahead, damn the torpedoes."

The (Hidden) Core of the Work Plan is the Astonishing Claim that Hunters Point is Too Clean, that 80% of Soil Declared Contaminated Wasn't in Fact Contaminated and Didn't Need to Be Cleaned Up.

The Navy in its public pronouncements has asserted that it recognizes the problem caused by Tetra Tech's falsification of data designed to claim contaminated soil was in fact clean, and that the Navy is committed to retesting to find all soil that was declared clean but wasn't. However, the actual Work Plan does precisely the opposite.

Buried in a few sentences on page iv and a footnote on page 2-1 the true intent is set forth, although in language that would not put any in the public on notice. Because of the importance of this breach of faith, we quote the passage from page iv verbatim:

The previous work relied on a quicker, less accurate method for analyzing radium-226 (226Ra). This method was *known by stakeholders at the time to be biased high. A large amount of soil (estimated 80 percent) was likely mischaracterized as contaminated* (Argonne National Laboratory, 2011).

(emphasis added)

As will be discussed shortly, this is completely wrong. But first let us discuss briefly the astonishing implications of these few lines.

The Navy claims that “stakeholders” have known since 2011 that the measurement technique for radium-226 gave erroneously high readings, resulting in large amounts of soil being cleaned up when they didn’t have to be, and did nothing about it. Who these stakeholders are is unclear, as they are noticeably not named, but surely the Navy is one.

Secondly, the Navy now astonishingly asserts that about 80% of soil (“a large amount”) was erroneously determined to be contaminated and shipped off as radioactive waste when it was in fact clean. Again, it says it has known this for seven years yet allowed this to continue.

If the Navy’s statement were true, it would mean a confession of misuse of tens or even hundreds of millions of taxpayer dollars. Congressperson Pelosi has called for an Inspector General investigation of the Navy’s conduct. This would seem to be a worthy aspects of such an investigation.

But the operative phrase is “if true.” The Navy’s inappropriate conduct with regards the retesting is its attempt to convert a promise to deal with Tetra Tech having declared contaminated soil clean into a plan by the Navy to now do the same at even larger scale. The irony is that if the Navy’s remarkable new claim were true—that it has known since 2011 that vast amounts of soil being cleaned up didn’t have to be—then it engaged in huge fraud against the public purse.

But it isn’t true. The heart of the claim rests on the assertion that Tetra Tech’s onsite laboratory overstated radium-226 concentrations because it couldn’t discriminate between the 186 kev gamma peak for radium-226 and the nearby peak for uranium-235. In other words, the contamination might not have been pure radium but might have included some uranium as well.

But, of course, that is completely irrelevant. One’s child should not be exposed unnecessarily to radium, uranium, or both together. Furthermore, the cleanup level of uranium-235 is about an order of magnitude lower than for radium-226, so if some of the contamination is uranium-235 rather than all being radium-226, it is worse from a cleanup standpoint than if all were radium.

The Navy may try to claim that uranium-235 isn’t a “radionuclide of concern” at Parcel G of

Hunters Point, that all uranium-235 there is from background.⁹ But that clearly isn't true. The nuclear materials licenses for the site included large amounts of U-235, and the contamination on the ships from the Pacific nuclear tests brought back to Hunters Point for decontamination, and the nuclear weapons debris from a range of nuclear tests also brought there, would have had U-235 as well.¹⁰

So, whereas the public may think the retesting plan is to deal with the fact that Tetra Tech manipulated data to claim radioactive soil was clean, the real purpose of the plan, as set forth by the Navy, is to assert that soil declared radioactive was in fact not. The site is too clean, the Navy now extraordinarily asserts.

Inflated Radiation Background

Immediately after asserting that 80% of the soil cleaned up at Hunters Point shouldn't have been, the Navy claims additionally that radiation background is much higher than previously assumed and should be pushed up to a larger value, further reducing the amount of soil that would be deemed contaminated and need cleanup. And indeed, much of the Work Plan is devoted to artificially inflating background.

"Background" refers to the amount of radioactivity that would have been at Hunters Point had the Navy done nothing to add to it. There is a bit of radium, thorium, and similar radionuclides in all soil naturally. When we mine them from the earth and concentrate them and use them and spill them, those concentrated amounts are above background. Similarly, because of the nuclear weapons tests such as those supported in the Pacific by Hunters Point naval operations in the forties and fifties, there are small amounts of artificial radionuclides spread everywhere on earth. It isn't natural radioactivity, but is now considered part of background.

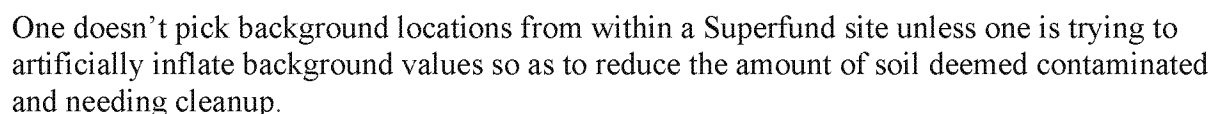
The Navy is not obligated to clean up natural or fallout radionuclides at background levels, only the radioactivity it and other Hunters Point entities added to background. So it has an incentive to make background seem as large as possible. An honest retesting plan would take honest measurements for background, which would entail by definition only samples from locations that couldn't be affected by Hunters Point activities. The fundamental rule is that you don't take background measurements anywhere near the place that could be contaminated. All of Hunters Point and the area nearby are potentially contaminated from decades of radioactive activity; background measurements must be taken offsite, and at a significant distance from the site.

However, the Work Plan proposes just the opposite. Four of the five proposed locations for soil background measurements are right within Hunters Point itself; the fifth is nearby. All could be contaminated by the decades of releases, spills, and airborne deposition of contamination. Only

⁹ The Work Plan concedes that U-235 is a Radionuclide of Concern for at least parts of Parcel G, and as indicated above, there is no reason to assume it isn't a potential contaminant throughout the parcel.

¹⁰ Whereas the Operations Crossroads tests involved plutonium weapons, subsequent tests involved bombs that included uranium-235.

Here is a map of their four primary soil locations for background, all within the Hunters Point Superfund site, all potentially contaminated:



On the next page we have included a Navy figure showing which buildings in Parcel G it *admits* are radioactively impacted. You will see in particular in the upper lefthand corner Building 401, identified as radiologically impacted. Where does the Navy Work Plan propose taking its sole background measurements for buildings? Building 401. As you will see in the second graphic, it intends to take those measurements within an impacted building and a few feet from an area of the building it also concedes is impacted. This makes no sense – unless again one is trying to inflate background. Background measurements for buildings must be taken in buildings some distance from the Superfund site, not in its midst.

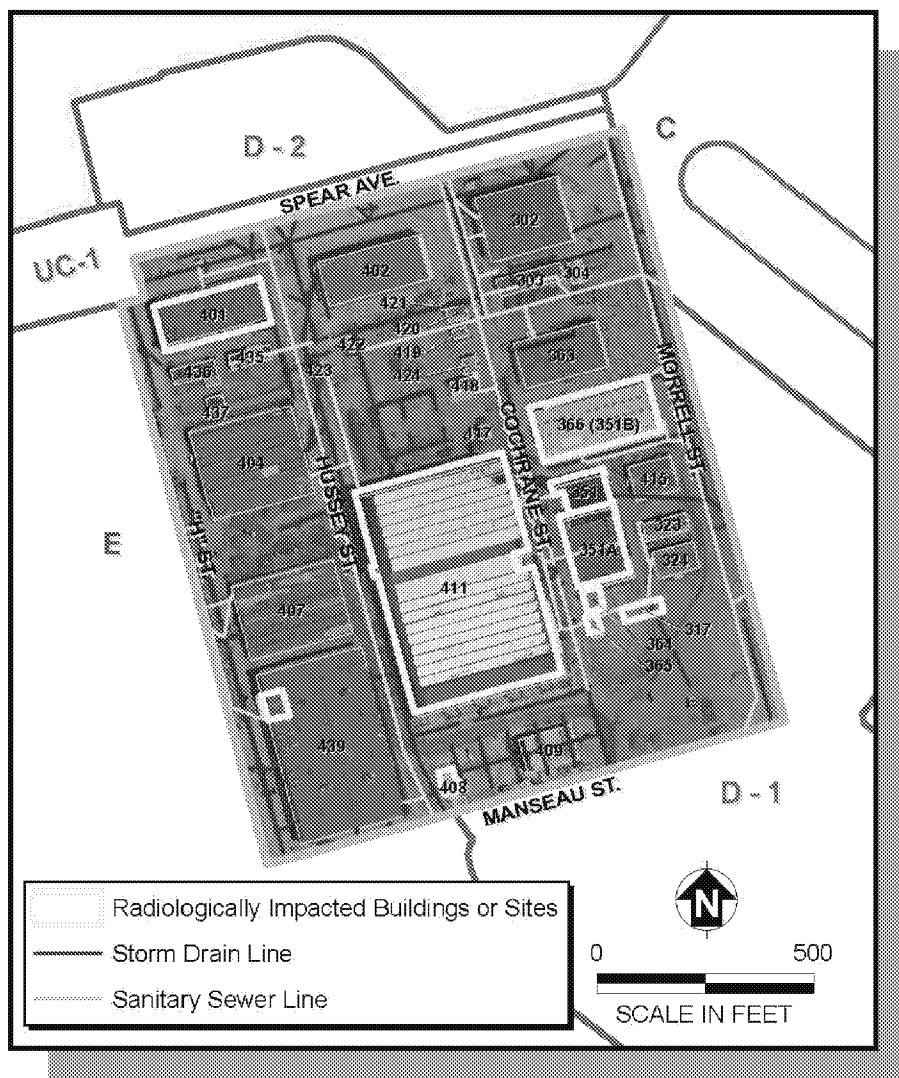
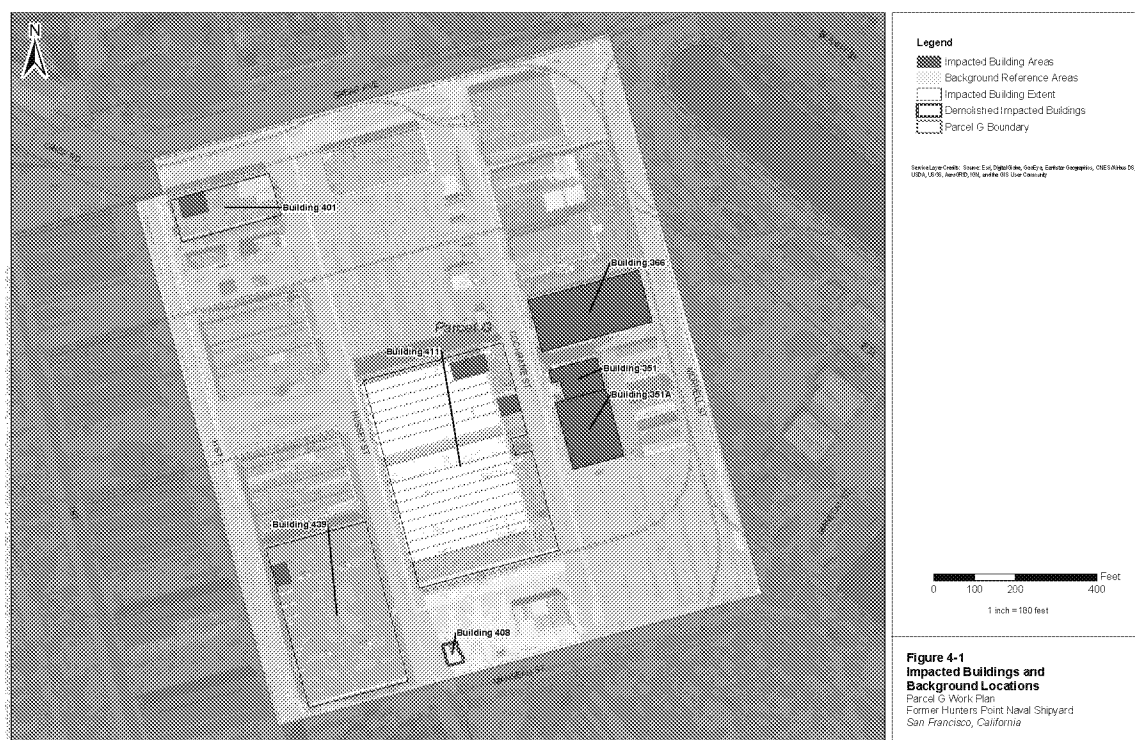


Figure 8. Radiologically Impacted Areas



Use of Extremely Weakened Cleanup Standards

Retesting performed in 2018 should be based on 2018 cleanup standards. Instead, the Work Plan proposes to use cleanup goals from 1974 for buildings and 1991 for soil—and then weaken them even further.

The Work Plan proposes to compare its measurements in buildings against an Atomic Energy Commission Regulatory Guide from 1974, which was never based on risk but rather on what hand-held detection equipment from the 1960s could easily see. Under CERCLA, the Superfund law, Superfund sites are supposed to be cleaned up consistent with EPA Superfund guidance. For buildings, that is EPA's Building Preliminary Remediation Goals (PRGs). EPA's Building PRGs are as much as thousands of times more protective than the standards being used in the Work Plan. Indeed, the Navy's Work Plan uses standards that are not only thousands of times higher than EPA's PRGs, but thousands of times higher than EPA's main risk goals, and tens of times higher than even the upper limit of what EPA legally considers acceptable levels of risk.

Similarly, the Work Plan uses soil remediation goals based on EPA soil PRGs—from 1991. Today’s PRGs, which should be used, are hundreds of times more protective than what is being used in the Work Plan.

To compound the problem, the Navy, in a footnote in the Work Plan, weakens its standards even further. The Record of Decision (ROD) for Parcel G sets remediation goals for all radionuclides except radium-226 as the full measured value of the radionuclide. Only radium -226 is set as the remediation goal plus background. However, the Work Plan, in a footnote, tries to change that so that all of the cleanup values are higher than those in the ROD, by making them just the incremental amount above background. One cannot change a ROD through a footnote in a testing plan. The Navy should be tightening the cleanup standards for Hunters Point to reflect current EPA guidance; instead it is further weakening those standards.

The Proposed Measurements Cannot Detect Most Radionuclides At All; and Those That Can Be Seen, Can Generally Not Be Detected at Even the Weak Cleanup Standards

The Work Plan relies heavily on gamma scans. Gamma scans, as indicated by their name, cannot see beta or alpha emitting radionuclides, only gamma ones. And the Work Plan reveals that the gamma scan can only see radium-226 at its grossly inflated cleanup level, not other gamma radionuclides such as cesium-137. Much of the measurements proposed in the Work Plan are blind to that which they are supposed to detect.

If you can't detect contaminants at the levels requiring cleanup, you can't determine that cleanup isn't required. You can declare "nothing detected," but that is only because nothing can be detected.

Conclusion

The Navy had a heavy burden in preparing this Work Plan for retesting Parcel G in the wake of the Tetra Tech data fabrication scandal. It had been demonstrated that past measurements had been falsified to declare contaminated soil and buildings clean when they weren't. The retesting plan was to regain public confidence by an honest and thorough set of new measurements that would not pretend things were clean when they weren't.

Instead, the Navy has proposed a plan that at best can't detect that which would require cleanup and at worst inflates background, further weakens already weak cleanup standards, and is intended by its own terms to declare the great majority of that which was cleaned up not having needed it. Instead of regaining public confidence, the Navy through the Work Plan has reinforced concerns that Tetra Tech's scandalous misdeeds may not have been solely at their own direction but instead part and parcel of the Navy's overall sweeping of safety under the rug and trying to minimize its cleanup costs at the expense of public safety.

Attachment – CBG Detailed Comments on Parcel G Retesting Work Plan

p. iii only references Navy reviews of Tetra Tech falsification, not EPA's. EPA found twice as many unreliable measurements as the Navy, and made numerous criticisms of the Navy reviews. The additional survey units identified by USEPA/DTSC/CDPH as needing retesting are excluded from the main retesting plan, and only a very superficial review of those survey units will be conducted, as Phase 2. This is quite inappropriate. And many of the other EPA criticisms of the Navy review are ignored. It is remarkable that the EPA/DTSC/CDPH review is essentially ignored.

“Additional reference background areas will also be identified to confirm, or update as necessary, estimates of naturally occurring and man-made background levels for ROCs not attributed to Naval operations at HPNS.” Note definition of background. “Not attributed” and focused on Naval operations at HPNS. Navy bringing in contaminated fill doesn't count, for example. This seems clearly an attempt to further inflate background.

p. iv cites ANL 2011 for claim radium measurements were biased high. The document can't be found—not on Navy website, ENVIROSTOR, or through a Google Search. It is inappropriate to not affirmatively make available a document as critical to this fundamental—and absurd--claim that the site is too clean. Note the first bullet is based on what are called accusations that “may” result in some contamination not cleaned up; next bullets are assertions that in fact too much was cleaned up. Astonishing—it asserts 80% of soil declared contaminated wasn't. No basis given. key -- says an estimated 80% of what was cleaned up didn't need to be, and says this was known since 2011 by “stakeholders”—who are unnamed. What stakeholders?

Conceptual Site Model is supposedly based on the HRA; but no, it isn't (nothing about radium measurements, falsification, or background in HRA), and HRA exempts 90% of the property from consideration.

It is very strange that the plan says they will monitor trench units but are silent on fill units. It refers to 63 trench units, but there are also 107 fill units.

phase I involves 21 of 63 former trench units, and 14 of 28 surface soil units from a former building site. Navy report had recommended retesting only 20 of trench units so it seems their Phase I is basically doing what they wanted to any way, and Phase II may touch the other units (except fill units) but not really retesting them.

Troubling that the plan targeted TUs and SUs for main retesting, based on Navy's estimate of which were fabricated; but EPA, DTSC, and CDPH said virtually all were. Plan essentially thumbs its nose at the Navy's regulators.

Excavated soil will be laid out in rad yards and gamma scanned in Phase I, which cannot see any beta or alpha radionuclides and they admit cannot see any gamma radionuclides of concern at cleanup levels except radium (admitting that it can't see cesium-137 at the cleanup levels).

p v Walk over or drive over gamma scans of surface soil units Phase I, which as indicated above, are blind to virtually all radionuclides of concern at the cleanup levels.

Phase II is deeply troubling--for 2/3 of trench units they will just do borings and do a gamma scan of the core.

Strange that they are only doing alpha-beta scans of buildings; no gamma.

p vi key comparing to the old, wrong release criteria; if meet those, everything OK. Yet the building release criteria are based on the 1974 Reg. Guide 1.86 from the now-defunct AEC, which violates EPA guidance saying one is supposed to use instead EPA's current Building PRG calculator for release criteria for buildings, and the soil release criteria are from 1991 EPA PRGs instead of the current EPA PRGs. In both cases, using the required EPA PRG calculators are far more more protective. There is no excuse to use vastly outdated and nonprotective release criteria.

(Note, there is no reference to using the sum of the fractions, no adding in other radionuclides or chemicals as is required under CERCLA.)

“Individual samples reporting 226Ra gamma spectroscopy concentrations greater than the RG for 226Ra will be analyzed for uranium-238 (238U) and 226Ra using comparable analytical methods. For that specific sample, the 238U result will be used as a more representative estimate of the background value for 226Ra, and the alpha spectrometry 226Ra concentration will be compared to the RG for 226Ra using the revised background value.” This is very erroneous and biased to reduce cleanup inappropriately. 238U can only be used to estimate 226Ra background if there is no possible added source of 238U beyond what occurred at the site in nature. Since More than a ton of 238U was licensed at Hunters Point, and additional uranium was associated with decontaminating ships and in fallout samples brought back from the nuclear test zones, no such assumption can be made. Using 238U as the 226Ra background is fundamentally flawed and designed once again to inflate background and improperly reduce cleanup. It shows a deep bias and lack of honesty in the Work Plan, a falsification not unlike that of Tetra Tech that this plan was supposed to correct.

Main Body of Work Plan

p. 1-1 only testing “radiologically impacted” soil and buildings, and only those tested by Tetra Tech. Much of HP will thus never be sampled. All of Parcel G is potentially impacted, from the decades of activities that could have resulted in widespread migration of contamination (e.g., sandblasting and steam-cleaning contaminated ships).

claims a phased approach was adopted pursuant to a suggestion by unnamed regulatory agencies. They should be identified—the silence is suspicious. It is not clear they wanted Phase II to be far less rigorous than Phase I, which is what the Navy is now proposing. If EPA etc didn't sign on to Phase II being less thorough than Phase I, claiming the phased approach comes from unnamed regulatory agencies is misleading at best.

They are not using all of MARRSIM, just parts they feel are “applicable” in light of the Basewide Rad Memo. Unclear what they are using and what not, and why.

Most of the actual plan will be in a Sampling and Analysis Plan, which is not included and is not subject to public review or input. This “hide the ball” approach is quite inappropriate, given the scandal that occurred in part because of failure of transparency and opportunity for full review.

key p 2-1 says purpose is to deal with allegations Tetra Tech misrepresented data—doesn’t say falsified, fabricated, etc. “and in addition” overestimated radium. The navy is changing the nature of the retesting entirely, which was to be to deal with Tetra Tech falsification. Instead it is now skewed toward asserting that there was too much cleanup, rather than too little.

fn is key claims used wrong measurement technique, and comparison with offsite lab was consistently higher for the onsite lab, but don’t show us those data, or why there isn’t a bias for the onsite lab. [note: if the radium measurements are biased high, so presumably should be the background, which would nullify it]

2-2 dredge spoils were used as fill. If true, than using measurements of fill that contained dredge spoils as background would be completely inappropriate, because Hunters Point activities (e.g., decontaminating ships in dry docks or slips) would have contaminated that material.

2-3 lists only a few Radionuclides Of Concern, ROCs, even fewer for most sites. There are on the order of 100 genuine ROCs, and artificially restricted them to a handful means that no measurements will be made for the great majority and even if there were, they would not be cleaned up because there are no remediation goals identified for them. So the Navy is declaring the great majority of Parcel G will never be tested, and for the parts that are, the great majority of radionuclides won’t be tested for or required to be cleaned up even if found.

2-4 outrageous; no pathway except for construction worker from ingestion or inhalation; only external exposure from ROCs for everyone else; and of course no garden KEY KEY KEY; will use for their risk assessment – only external exposure (through covers) are pathways considered.

astonishing under the uncertainties section: The assertion that there is a LOWER potential for contamination than previously assumed. Not a single item is identified about higher potential.

“LLRW bins were tested by the Navy’s independent waste broker at an offsite laboratory using 5-point composites, and only 3 out of 1,411 bins had results with 226 Ra above the RGs.” Where is the documentation for this, and what is a 5-point composite---averaging, which is inappropriate? How were they tested? This claim seems very flimsy, and the lack of information provided suggests that the Navy recognizes this.

Buried the data falsification as an issue.

3-1 the objective shouldn't be the 2009 ROD, but today's standards. If one is going to retest in 2018, one should do so against 2018 standards. But in fact, Navy isn't even using the 2009 ROD standards, but has changed them in the Work Plan – illegally – to make them all standards incremental above background, which isn't allowed in the ROD for anything except radium.

3-2 deeply troubling and wrong: “If any 226Ra gamma spectroscopy concentration is greater than the RG for 226Ra, then the soil sample will be analyzed for 238U and 226Ra using comparable analytical methods (e.g., alpha spectrometry for 238U and radon emanation for 226Ra). For that specific sample, the 238U alpha spectrometry result will be used as a more representative estimate of the background value for 226Ra, and the alpha spectrometry comparable result for 226Ra will be compared to the RG for 226Ra using the revised background value.” “Comparable” methods not delineated. But key—even with all the games they are playing, if a measurement exceeds the cleanup standard of 1 pCi/g above the established background, which should be the end of the matter and the area cleaned up, rather than using the established background, they will use the U-238 level in the radium sample. This makes no sense, for the reasons set forth above, that you can only use U-238 for Ra-226 background if there is no U-238 possible besides natural levels; but huge amounts of U-238 were used at Hunters Point, so the U-238 measurements won't reflect background but rather background plus contamination.

“The radiological investigation will be conducted on a targeted group of 21 of the 63 TUs associated with former sanitary sewers and storm drains and 14 of the 28 SUs3 associated with surface soil at building sites in Parcel G.” The rad investigation thus will be on only part of the suspect sites. thus violating EPA/DTSC/CDPH recommendation for retesting virtually everything. [The cursory scanning in Phase II of other survey units does not meet the requirement for full retesting of suspect sites.]

Here they will not disclose how many soil samples will be taken, systematic or biased.

3-3 Indefensible -- only 3 ROCs for TUs (trench units) and 4 for building soil. Even the documents they cite (RODs and HRA) show more ROCs than these; but there could be a hundred ROCs. Nuclear weapons test debris would contain a full range of fission products, unfissioned plutonium and uranium, and activation products (including from activated corral and sand). There is simply no scientific basis for asserting there are only 3 or 4 possible radionuclides, even taking into account decay life.

They only have an investigation level for radium (1 pCi/g), not for anything else! They concede they can't see the other ROCs at the cleanup levels, or at all.

critical: footnote a-- “All RGs will be applied as concentrations above background.”
Massive change to ROD, 2006 standards; violates EPA. KEY The ROD applies release criteria, with the exception of radium-226, as the full concentration measured; only radium RG is the concentration above background. You can't change the ROD through a footnote in a retesting Work Plan. They are weakening the standards through the retesting plan, which should be designed to increase public protection, not reduce it.

They will not do biased samples or do more measurements unless gamma scan goes over investigation level; but only have an investigation level for radium---NOTHING ELSE—and it is 1000 times the EPA PRG. So they will virtually never do biased soil samples, even though there could be contaminants above the release criteria.

3-4 can't see cesium at cleanup level with the gamma scan; and of course the Pu and Sr aren't given investigation levels either, because can't be seen, as they are alpha and beta emitters that the gamma scan can't see at all. Only scanning for radium and Cs, but no investigation for the latter because they can't see it at the level of concern.

They are limiting the scans to just those two, with no investigation limit even for Cs; whereas there are other gamma emitters worth watching out for. All the stuff you are interested in from the NRDL work and the decon of ships—fission products, unburned Pu and U—they can't detect and aren't measuring for and don't have investigation levels for in terms of the scans.

Refers to investigation “levels”—but in fact only one investigation level for one radionuclide, radium, and that one they are cheating on.

“The radiological investigation design is primarily based on methods, techniques, and instrument systems in the Basewide Radiological Management Plan (TtEC, 2012) with the ultimate requirement to demonstrate compliance with the Parcel G ROD RAO (Navy, 2009).” In other words, the design is based on the work of Tetra Tech, which they are supposed to be throwing out because of falsification.

‘The RGs presented in Table 3-5 are incremental concentrations above background’ -- key, very dishonest, the remediation goals in the ROD are, with the exception of radium, not incremental concentrations above background; you can't change the ROD through a footnote in a subsequent retesting plan; and this in any case violates EPA guidance, which requires cleanup standards to be the full measured value (contamination plus background) and not the incremental amount above background.

following Tetra Tech, only 18 samples per unit. Pretty hard to find contamination with those few samples.

3-5 chose places to resample based largely on Navy 2017; silent about EPA's review that found twice as many suspect places.

6” over-excavation; unclear if it will be sampled, or only scanned once removed

Table 3-1 makes no sense, sidewall unit seems to have far larger volume than excavation volumes but footnote says equal. claims to take 2600 systematic samples from trench units. Really not that large given the area involved and the scope of the problem.

For Phase II, they are only taking 36 systematic samples per trench, compared to as many as 270 per trench for Phase I—stiffing EPA/DTSC/CDPH recommendations that almost everything should be fully sampled. Phase II, just a handful of cores, as opposed to excavating all the soil in the survey unit in question.

3-7 Phase I based solely on allegations of problems found in Navy 2017; silent on EPA/DTSC/CDPH analysis that found far more problems. .

former building areas; subject only to gamma scan; biased samples will only be taken where gamma scan over investigation levels (just radium); focused on peaks for the ROCs, which means only radium (and maybe cesium, but they admit they can't see it at levels of concern) what levels can they see—don't say; but since they don't have an investigation level, doesn't matter. In other words, they are relying on gamma scans that can basically see almost nothing that exceeds the cleanup levels.

3-8 instrumentation requirements will be based on Tetra Tech past report—again, relying on the work of the very contractor that has been discredited and whose work they are supposed to be independently redoing.

lab instruments will be set forth in Sampling Analysis Plan which the public can't see or comment on. Field instruments only set for radium, bismuth, and cesium (with the latter irrelevant because of poor minimum detectable activity, MDA)

3-10 don't give MDAs for field instruments, just formula how they will calculate; critical to know the actual MDA

calibrated annually! that doesn't seem sensible.

improper—3-14 “ provide real-time NORM background subtraction”
soil sorting system sounds questionable; conveyor belt, sorting into clean and dirty piles via high velocity and volume running by a detector; but you are still supposed to take actual soil samples, so not clear how you can do systematic lab samples if you have already piled all the soil into a “clean” pile

3-15 compositing the sample over a large volume; potentially problematic—averaging generally prohibited by EPA for residential use; easy to dilute

18 systematic samples but only 1 biased sample, from the diversion bin.

3-16 radiological screening yard; if not over RGs, declared clean and OK for reuse or to be sent off site; but RGs only for 3 or 4 ROCs, and the screening can only see for 1, radium, about which they are playing games (the throwing out of the lab measurements for Ra based on the spurious claim related to the nearby uranium peak). So almost all of the screening in the screening yard is useless; blind to almost any radionuclide at the levels that matter.

3-17 only 6 cores per TU; gamma scan of core, based on investigation level, which exists only for radium and which is already very elevated; 1 pCi above BKG, as they have been describing for all others, and inflated background. The gamma scanning of cores, rather than soil sampling, is designed to fail – it is blind to essentially anything that matters, can't see alpha, can't see beta, and can't see almost any gamma at the cleanup levels.

3-21 DOD certified lab; not EPA or state certified.

key—analysis will only be for the 3 or 4 ROCs!!!! and only 10% will be tested for Sr-90; and that using gas proportional counting (I don't see reference to chemical separation)

doesn't specify technique for Sr-90—important; easy to screw up

additionally, if sample is over RG for Cs (and they are using the wrong RG, not today's EPA PRG, and beyond that they are now using RG + [unspecified] BKG, rather than the RG alone), only then will they sample for Sr—very troubling, because there was a lot of separated Sr used at Hunters Point.

They only will analyze for Pu if Cs or Sr is above RG—again, deeply troubling. You can readily have Plutonium over release levels without Cs or Sr also being above their levels; in part because they have different Kd values affecting migration rates.

If Radium is over RG, they insist on additional analyses for NORM to try to throw out the reading. Everything is biased to throw out readings that would require cleanup; no parallel bias to double-check readings that are below RG, when that may be wrong. They are to alpha spec for U-238; "Analyses using alpha spectrometry for 238U along with an analytical method for 226Ra comparable with alpha spectrometry for 238U will be performed in accordance with the SAP." Potential for some mischief here, not detailed.

Table 3-2 only 18 samples total per TU from fill for any Phase II analyses

pdf 49 (no page or figure #) action only taken if 226Ra Concentration > 238U Concentration + RG. This is wrong and irresponsible, violates the ROD, outside of EPA practice. Issue isn't any longer whether Ra is greater than RG; it has to be greater than RG and U-238 concentration added together. If not, complies---dangerous. The error in assuming U-238 level is the background level for Ra-226 has been described above; that only could work if there was no U-238 besides that in background, but Hunters Point used huge amounts of U-238.

4-1 buildings to be tested against AEC Reg Guide 1.86, not EPA's Building PRG calculator, as required by EPA guidance for CERCLA sites. Reg. Guide 1.86 values are thousands of times less protective than EPA PRGs and outside even the upper limit of the EPA acceptable risk range.

Key – even with all these manipulations, if they still don't meet release criteria, they won't clean it up; they will do an analysis of risk to say it is OK not to clean it up. That violates the ROD. The remediation goals are the contamination levels that are supposed to trigger cleanup.

They claim they will follow EPA guidance, but clearly aren't—for example, they aren't using current PRGs for soil or the EPA building PRGs at all..

4-2 claim only 2-4 ROCs per building; not credible; there are a hundred potential radionuclides of concern at those buildings.

4-3, again following the Tetra Tech protocols, when all of Tetra Tech's work is suspect and they should be relying on none of it; only 18 measurements per; only one RBA—another potentially contaminated building

4-5 beta background for detectors is pretty high

Figure 4-1 amazing background reference area is in an admittedly impacted building, a few feet away from parts of the building admitted to be impacted!!

5-2, will report building measurements in cpm, instead of the units of the RGs, which are in dpm; suggests they are trying to hide things; should use the units comparable to the RGs

5-3 will compare to their claimed background, to say if “consistent with background,” then no action; but the background is feet away from the contaminated area and likely contaminated as well

5-4 extraordinary show of bias: if results exceed RGs, they will re-evaluate, see if they can question the measurement; if doesn't exceed RG, they accept it without question. All sorts of procedures to go back, not to the right portion of the soil that was elevated, and say they didn't find it again; but if results are below RGs, they accept that without re-evaluation. So the bias is heavy: question all readings above cleanup levels, because those could cost the Navy money, but do nothing to confirm readings below cleanup levels, which if wrong could place people's health at risk.

“All scan data will be compared directly to RGs or investigation levels.” But they concede scan data cannot see RGs for anything but radium and they have no investigation level except for radium because of that.

“If direct measurement or sample results exceed the RG or investigation level for a specific ROC for locations not identified by scan survey, the scan survey technique will be reviewed and investigated to determine whether the scan survey was implemented correctly and whether the scan methodology met the survey objectives.” But the Navy has admitted the gamma scan can't see almost any ROCs at RGs or investigation levels.

“The objective of investigating potential areas of elevated activity is to characterize the ROCs present and the size, or extent, of all areas of elevated activity. To accomplish this objective, a minimum of one potential area of elevated activity will be investigated in every SU.” The Navy may only investigate one elevated area per SU even if there are multiple elevated areas?

Bias is made clear – “The first step in investigating potential areas of elevated activity is to

confirm the measurement or sample results that indicated the potential area of elevated activity.” In other words if elevated, don’t go forward unless confirmed; if supposedly not elevated, no need for confirmation. This is a clear indication of the bias in the whole plan, biased towards reducing the Navy’s cleanup expenses at the cost of increasing the risk of missing contamination that should be cleaned up. “In most cases, at least one measurement or sample result documenting the lack of elevated activity will be required to support a decision to terminate the investigation of a potential area of elevated activity.” If you have a measurement showing it is elevated, and you take one confirmatory measurement that comes back different, you trust the no-contamination value and throw out the contamination measurement. There is no reason to believe the second measurement rather than the first. This is pure bias. As is the only requirement for confirmatory measurements is if a reading has been high, not if it was low. If the concern were public health rather than Navy expenditures, the bias would have been in the other direction.

5-5 “Determining the extent of elevated activity for ROCs without a significant gamma emission, such as 90Sr and 239Pu, will require collecting additional soil samples or **establishing a correlation between the difficult-to-detect ROC and 226Ra**. Even when a correlation can be determined, the scan survey objectives will need to be reviewed and adjusted to account for detecting 226Ra at lower activity levels. If the elevated activity is associated with 90Sr or 239Pu results **significantly above background**, a Field Change Request will be initiated to document the characterization of any potential areas of elevated activity.” Note that the issue isn’t any longer exceeding release criteria; it has to be, not just above (already inflated background values) but significantly above background, not defined.

“If all alpha or beta static measurement or ROC-specific soil sample analysis result are less than the RGs or investigation levels, compliance with the Parcel G ROD RAO is achieved.” This makes no sense; there is only 1 soil investigation level, for one radionuclide, because the gamma scanner can’t see anything else.

“A NORM background evaluation will be performed for every sample where the 226Ra concentration exceeds the average RBA 226Ra concentration by more than the RG of 1.0 pCi/g. The purpose of the NORM background evaluation is to ensure the most representative estimate of background available is used to evaluate 226Ra results for comparison with the RG, not to validate analytical methods.” Deeply troubling; the standard is to use the RBA they already set; but if it goes more than 1 pCi over that (i.e., is over the release limit), they will go back and CHANGE the background. Again, they aren’t doing this if the value is below the RG; pure bias.

“The 226Ra background at HPNS is known to vary significantly in different areas of the site. **Since 238U is not a ROC at HPNS, 238U concentrations are an acceptable representative of background** for all radionuclides included in the naturally occurring uranium decay series, which includes 226Ra. By definition, 226Ra concentrations are considered background when 226Ra is in secular equilibrium with 238U, which means the 226Ra concentration is equal to the 238U concentration. Therefore, the 238U concentration can replace the average RBA 226Ra concentration as a more representative estimate of background for a specific sample.” This is plainly wrong and biased. As indicated above, there was more than a ton of U238 at HP from HP activity; it certainly must be a ROC, which bars its use as radium background due to secular

equilibrium. Using U238 as the Radium background is irresponsible.

“Alpha spectrometry provides ²³⁸U analytical results of acceptable quality for the NORM evaluation. However, the gamma spectroscopy results for ²²⁶Ra are based on larger volumes of soil and are not always comparable with alpha spectrometry results. Therefore, an analytical method for ²²⁶Ra comparable with alpha spectrometry for ²³⁸U is required to perform the NORM evaluation. For example, radon emanation analyses for ²²⁶Ra have similar sample support in terms of sample preparation and sample volume compared to alpha spectrometry for ²³⁸U, and are considered comparable for purposes of the NORM evaluation. Alternatively, gamma spectroscopy uses minimal sample preparation and much greater volumes of soil for analysis, and may result in significantly different results based solely on the analytical method compared to alpha spectrometry and radon emanation.” Troubling; they don’t even have comparable measurement techniques for radium and uranium. They say radon emission analyses “are considered comparable for purposes of the NORM evaluation.” Considered comparable by whom? They always slide over such language. And comparable just for NORM evaluation, meaning not generally comparable and questionable for NORM. The radium background is already grossly inflated; they want to inflate it even further by declaring the amount of U-238 to be the radium background, even though there is U contamination at Hunters Point and even though the measurement techniques aren’t the same.

They had licenses for (which only accounts for a fraction of the radioactive materials there) 2520 pounds of natural or depleted uranium, essentially therefore all U-238. this doesn’t count all the U238 from ship decontamination (e.g., U238 tamper, and third stage of H bombs) and fallout debris brought back. You can’t use U-238 as a NORM at Hunters Point, or to assume secular equilibrium so you can claim it as radium background.

“The NORM background evaluation simply replaces the average RBA ²²⁶Ra gamma spectroscopy concentration with a ²³⁸U alpha spectrometry concentration as a more representative estimate of background for a specific sample. At the same time, the ²²⁶Ra gamma spectroscopy result is replaced with an analytical result using a method comparable to alpha spectrometry (such as radon emanation). If the revised ²²⁶Ra result, using an analytical method comparable to alpha spectrometry, exceeds the revised background value based on the ²³⁸U alpha spectrometry result by less than the RG of 1.0 pCi/g, the sample demonstrates compliance with the Parcel G ROD RAO. If the revised ²²⁶Ra result exceeds background by more than 1.0 pCi/g, additional evaluation may be performed. If the NORM background evaluation is inconclusive, more analysis may be conducted.” We’ve demonstrated repeatedly above why this is obviously wrong and intended to reduce cleaning up that which should be cleaned up. If over the RG, that should be the end of it; instead, they test with a different measurement, of unclear accuracy “such as radon emanation” and alpha spec for U238, subtracting U238 level from the radium level. If the second measurement is OK, the first is thrown out (bias always to throwing out); then if that is not OK, that also should be the end of it, but instead, more analysis is done. Everything is biased against public health. Also, details of what techniques they will use are not provided, so can’t review to see if credible at all; don’t even specify what technique, but just “comparable to alpha spec, such as radon emanation.” Much room for mischief; no transparency; hide the ball.

5-6 key This include numerous games to throw out readings that are above 1 pci/g above background (e.g. further inflating background, requiring measurements by several techniques before you will accept a high reading, etc.); fail to deal with the fact that 1 pCi/g above background is an immense cancer risk, far outside EPA risk range.

They plan to evaluate whether the RBA data are representative of the contaminated area being studied; by definition the contaminated should be different.

They are using median values for the entire SU – but averaging is forbidden by EPA for situations such as residential use where use is non-random. Under CERCLA they are required to use EPA's CERCLA guidance, but are repeatedly violating it. They are setting a figure of over 3, and perhaps over 2, as non-representative; troubling.

Says using average values over wide areas, comparing to derived concentration values for wide areas – none of which they are supposed to do, as discussed above. EPA guidance requires them to use “not to exceed,” not average; release criteria, not derived concentration values for wide areas, etc.

Whole point of this discussion is to throw out reference background areas and replace them with ones with higher background. Not clear how they can claim they can look at SU/TU compared to RBA and if ratio is high, determine RBA wrong; why is it not that the SU/TU is contaminated?

Also uses “NORM evaluation”—the substitution of high U-238 values for actual background radium numbers, which we've shown is wrong and biased.

5-7 gives themselves a whole range of actions to take if, after all the games to declare something not contaminated, still seems to be, so they don't have to clean it up.

6-1 says Perma-Fix will do the work. Who is Perma-Fix? Navy says no contractor selected to do the work, aside from Jacobs Engineering doing some buildings. (Navy Q&A). But p 1 of this plan says CH2MHill and its subcontractor Perma-Fix will do it. What is going on?

refers to Appendix C MOU, but that is for 2 or 3 companies that aren't identified as part of this plan at all.

7-1 won't disclose where it will be staged or disposed of. Doesn't define how they will divide between LLRW and non-LLRW

7-2 very troubling: “7.2.1 Waste Classification Accumulated waste deemed to be radioactive waste will be classified as LLRW based on 49 CFR, basewide requirements, or disposal facility requirements. Waste characteristics, including the radionuclides present and their associated specific activities, will be measured by an available standardized test method per the SAP, such as gamma spectroscopy, strontium analysis, or alpha spectrometry.” 49 CFR what? why Title 49? These are Department of Transportation placarding requirements for trucks; they are not regulations defining what is low level radioactive waste and has to be disposed of in a licensed

LLRW site. Under current rules, any waste with radiation above background is LLRW and has to go to a licensed LLRW site. The passage declines to say what basewide requirements? what disposal facility requirements? It should be far more clear: anything with radioactivity above background is LLRW. At minimum, anything over proper release criteria (EPA current default PRGs for unrestricted use.) NO NO NO—49 CFR is DOT transport regs—those are not regs for determining what is LLRW for disposal purposes. Doesn't mention California law, the Keeley Act, barring LLRW in anything other than a specially licensed LLRW site with multiple barriers, retrievable, monitorable, etc. Ignores Governor Davis's moratorium, still in effect, barring disposal in municipal landfills.

Does not specify what rad concentrations, not averaged, will be considered LLRW waste. There is no Below Regulatory Concern level. NRC tried to establish a BRC level; Congress struck it down.

P. 7-9 “7.5 Compliance with CERCLA Offsite Rule

Consistent with the CERCLA Offsite Rule, wastes generated from remediation activities, such as contaminated soil or hazardous waste, at a CERCLA site may be transferred only to offsite facilities that have been deemed acceptable by the USEPA Regional Offsite Contact (40 CFR 300.440). With Naval approval, the contractor will request proof of Offsite Rule approval from the offsite disposal facility before transferring any wastes to an offsite facility.” That isn't the CERCLA offsite rule; and this doesn't say you will even get EPA approval, merely that the contractor will request info from disposal facility. Not what is required; particularly if they don't disclose to the recipient facility the fact that the waste is still radioactive (if that is what they intend to do, seemingly), even if below release criteria. REPETITION OF ORIGINAL HUNTERS POINT PROBLEM OF SENDING RADWASTE TO SITES NOT LICENSED OR DESIGNED FOR RADWASTE.

7-10 “Uncontaminated debris may be sent to municipal landfills, landfills designated for construction/demolition debris or a recycling facility.” NO. Repeating the same mistake. No definition of “uncontaminated.” If it means below release criteria for, say, restricted release (based on assumption of no groundwater use, cement cap, no residences or no gardens; or failing to consider direct contact with the recycled material), then sending it to municipal landfills or recycling is inappropriate, as there are different exposure pathways. And violates BRC prohibition, and Governor's moratorium. Note not a word about the gubernatorial moratorium.

8-3 Only monitoring for and limiting a handful of radionuclides; once again, declaring all others to not be ROCs, when scores of radionuclides are of concern at HP.

Inappropriate: set Derived Allowable Concentrations for air emissions at occupational levels, not levels for public; 100 times too high.

Appendix A

taking only 5 samples per RBA—not enough for appropriate statistics and keeping error margins small.

key again: SAP kept secret, which is where the detail and really important material are buried
2-1 surface 0-6” -- which?, matters for fallout, which tends to be in the upper part of the profile.
subsurface, 1-2 foot intervals up to a depth of 10’ which? 1 or 2 foot intervals? to what depth?
too much room for altering outputs.

off-base only set at surface, 0-6”? No subsurface? p3-3 says no subsurface for offsite. No good reason given. If fallout offsite is on surface and not subsurface, as would be expected, you need to know that, rather than assuming same level of fallout through the profile.

3-3 only 5 surface samples per RBA; 25 subsurface—simply at one spot, at 5 depths, from one core?

fn a p. 3-2, again says All RGs will be applied as concentrations above background. Again, violates and tries to illegally change the ROD without changing the ROD; violates EPA policy as well.

U-235 is identified as a ROC in the table and given a cleanup level; so throwing out radium readings because they may also include some U-235 is nonsensical, because it doesn’t matter to the person exposed if they are being irradiated by pure radium or radium plus uranium-235.